

## **RAW SEQUENCE LISTING**

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/586, 072A  
Source: EFWO  
Date Processed by STIC: 11/09/2006

***ENTERED***



IFWO

**RAW SEQUENCE LISTING**  
**PATENT APPLICATION:** US/10/586,072A

**DATE:** 11/09/2006  
**TIME:** 09:00:52

**Input Set :** A:\253625.ST25.txt  
**Output Set:** N:\CRF4\11092006\J586072A.raw

3 <110> APPLICANT: BROUGH, DOUGLAS E.  
 5 <120> TITLE OF INVENTION: METHODS OF GENE THERAPY FOR TREATING DISORDERS OF THE EAR BY  
 6 ADMINISTERING A VECTOR ENCODING AN ATONAL-ASSOCIATED FACTOR  
 8 <130> FILE REFERENCE: 253625  
 C--> 10 <140> CURRENT APPLICATION NUMBER: US/10/586,072A  
 C--> 10 <141> CURRENT FILING DATE: 2006-07-14  
 10 <150> PRIOR APPLICATION NUMBER: PCT/US04/04891  
 11 <151> PRIOR FILING DATE: 2004-02-19  
 13 <150> PRIOR APPLICATION NUMBER: US 10/373,249  
 14 <151> PRIOR FILING DATE: 2003-02-24  
 W--> 15 <160> NUMBER OF SEQ ID: 7  
 17 <170> SOFTWARE: PatentIn version 3.3  
 19 <210> SEQ ID NO: 1  
 20 <211> LENGTH: 351  
 21 <212> TYPE: PRT  
 22 <213> ORGANISM: Mus musculus  
 24 <400> SEQUENCE: 1  
 26 Met Ser Arg Leu Leu His Ala Glu Glu Trp Ala Glu Val Lys Glu Leu  
 27 1 5 10 15  
 30 Gly Asp His His Arg His Pro Gln Pro His His Val Pro Pro Leu Thr  
 31 20 25 30  
 34 Pro Gln Pro Pro Ala Thr Leu Gln Ala Arg Asp Leu Pro Val Tyr Pro  
 35 35 40 45  
 38 Ala Glu Leu Ser Leu Leu Asp Ser Thr Asp Pro Arg Ala Trp Leu Thr  
 39 50 55 60  
 42 Pro Thr Leu Gln Gly Leu Cys Thr Ala Arg Ala Ala Gln Tyr Leu Leu  
 43 65 70 75 80  
 46 His Ser Pro Glu Leu Gly Ala Ser Glu Ala Ala Ala Pro Arg Asp Glu  
 47 - 85 90 95  
 50 Ala Asp Ser Gln Gly Glu Leu Val Arg Arg Ser Gly Cys Gly Leu  
 51 100 105 110  
 54 Ser Lys Ser Pro Gly Pro Val Lys Val Arg Glu Gln Leu Cys Lys Leu  
 55 115 120 125  
 58 Lys Gly Val Val Val Asp Glu Leu Gly Cys Ser Arg Gln Arg Ala  
 59 130 135 140  
 62 Pro Ser Ser Lys Gln Val Asn Gly Val Gln Lys Gln Arg Arg Leu Ala  
 63 145 150 155 160  
 66 Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn His Ala Phe  
 67 165 170 175  
 70 Asp Gln Leu Arg Asn Val Ile Pro Ser Phe Asn Asn Asp Lys Lys Leu  
 71 180 185 190  
 74 Ser Lys Tyr Glu Thr Leu Gln Met Ala Gln Ile Tyr Ile Asn Ala Leu  
 75 195 200 205

(Pg-6)

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78 Ser Glu Leu Leu Gln Thr Pro Asn Val Gly Glu Gln Pro Pro Pro Pro  
79 210 215 220  
82 Thr Ala Ser Cys Lys Asn Asp His His His Leu Arg Thr Ala Ser Ser  
83 225 230 235 240  
86 Tyr Glu Gly Gly Ala Gly Ala Ser Ala Val Ala Gly Ala Gln Pro Ala  
87 245 250 255  
90 Pro Gly Gly Pro Arg Pro Thr Pro Pro Gly Pro Cys Arg Thr Arg  
91 260 265 270  
94 Phe Ser Gly Pro Ala Ser Ser Gly Gly Tyr Ser Val Gln Leu Asp Ala  
95 275 280 285  
98 Leu His Phe Pro Ala Phe Glu Asp Arg Ala Leu Thr Ala Met Met Ala  
99 290 295 300  
102 Gln Lys Asp Leu Ser Pro Ser Leu Pro Gly Gly Ile Leu Gln Pro Val  
103 305 310 315 320  
106 Gln Glu Asp Asn Ser Lys Thr Ser Pro Arg Ser His Arg Ser Asp Gly  
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110 Glu Phe Ser Pro His Ser His Tyr Ser Asp Ser Asp Glu Ala Ser  
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115 <211> LENGTH: 351  
116 <212> TYPE: PRT  
117 <213> ORGANISM: Mus musculus  
119 <400> SEQUENCE: 2  
121 Met Ser Arg Leu Leu His Ala Glu Glu Trp Ala Glu Val Lys Glu Leu  
122 1 5 10 15  
125 Gly Asp His His Arg His Pro Gln Pro His His Val Pro Pro Leu Thr  
126 20 25 30  
129 Pro Gln Pro Pro Ala Thr Leu Gln Ala Arg Asp Leu Pro Val Tyr Pro  
130 35 40 45  
133 Ala Glu Leu Ser Leu Leu Asp Ser Thr Asp Pro Arg Ala Trp Leu Thr  
134 50 55 60  
137 Pro Thr Leu Gln Gly Leu Cys Thr Ala Arg Ala Ala Gln Tyr Leu Leu  
138 65 70 75 80  
141 His Ser Pro Glu Leu Gly Ala Ser Glu Ala Ala Ala Pro Arg Asp Glu  
142 85 90 95  
145 Ala Asp Ser Gln Gly Glu Leu Val Arg Arg Ser Gly Cys Gly Leu  
146 100 105 110  
149 Ser Lys Ser Pro Gly Pro Val Lys Val Arg Glu Gln Leu Cys Lys Leu  
150 115 120 125  
153 Lys Gly Gly Val Val Val Asp Glu Leu Gly Cys Ser Arg Gln Arg Ala  
154 130 135 140  
157 Pro Ser Ser Lys Gln Val Asn Gly Val Gln Lys Gln Arg Arg Leu Ala  
158 145 150 155 160  
161 Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn His Ala Phe  
162 165 170 175  
165 Asp Gln Leu Arg Asn Val Ile Pro Ser Phe Asn Asn Asp Lys Lys Leu  
166 180 185 190  
169 Ser Lys Tyr Glu Thr Leu Gln Met Ala Gln Ile Tyr Ile Asn Ala Leu  
170 195 200 205

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Input Set : A:\253625.ST25.txt  
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173 Ser Glu Leu Leu Gln Thr Pro Asn Val Gly Glu Gln Pro Pro Pro Pro  
174 210 215 220  
177 Thr Ala Ser Cys Lys Asn Asp His His His Leu Arg Thr Ala Ser Ser  
178 225 230 235 240  
181 Tyr Glu Gly Gly Ala Gly Ala Ser Ala Val Ala Gly Ala Gln Pro Ala  
182 245 250 255  
185 Pro Gly Gly Gly Pro Arg Pro Thr Pro Pro Gly Pro Cys Arg Thr Arg  
186 260 265 270  
189 Phe Ser Gly Pro Ala Ser Ser Gly Gly Tyr Ser Val Gln Leu Asp Ala  
190 275 280 285  
193 Leu His Phe Pro Ala Phe Glu Asp Arg Ala Leu Thr Ala Met Met Ala  
194 290 295 300  
197 Gln Lys Asp Leu Ser Pro Ser Leu Pro Gly Gly Ile Leu Gln Pro Val  
198 305 310 315 320  
201 Gln Glu Asp Asn Ser Lys Thr Ser Pro Arg Ser His Arg Ser Asp Gly  
202 325 330 335  
205 Glu Phe Ser Pro His Ser His Tyr Ser Asp Ser Asp Glu Ala Ser  
206 340 345 350  
209 <210> SEQ ID NO: 3  
210 <211> LENGTH: 354  
211 <212> TYPE: PRT  
212 <213> ORGANISM: Homo sapiens  
214 <400> SEQUENCE: 3  
216 Met Ser Arg Leu Leu His Ala Glu Glu Trp Ala Glu Val Lys Glu Leu  
217 1 5 10 15  
220 Gly Asp His His Arg Gln Pro Gln Pro His His Leu Pro Gln Pro Pro  
221 20 25 30  
224 Pro Pro Pro Gln Pro Pro Ala Thr Leu Gln Ala Arg Glu His Pro Val  
225 35 40 45  
228 Tyr Pro Pro Glu Leu Ser Leu Leu Asp Ser Thr Asp Pro Arg Ala Trp  
229 50 55 60  
232 Leu Ala Pro Thr Leu Gln Gly Ile Cys Thr Ala Arg Ala Ala Gln Tyr  
233 65 70 75 80  
236 Leu Leu His Ser Pro Glu Leu Gly Ala Ser Glu Ala Ala Ala Pro Arg  
237 85 90 95  
240 Asp Glu Val Asp Gly Arg Gly Glu Leu Val Arg Arg Ser Ser Gly Gly  
241 100 105 110  
244 Ala Ser Ser Ser Lys Ser Pro Gly Pro Val Lys Val Arg Glu Gln Leu  
245 115 120 125  
248 Cys Lys Leu Lys Gly Gly Val Val Val Asp Glu Leu Gly Cys Ser Arg  
249 130 135 140  
252 Gln Arg Ala Pro Ser Ser Lys Gln Val Asn Gly Val Gln Lys Gln Arg  
253 145 150 155 160  
256 Arg Leu Ala Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn  
257 165 170 175  
260 His Ala Phe Asp Gln Leu Arg Asn Val Ile Pro Ser Phe Asn Asn Asp  
261 180 185 190  
264 Lys Lys Leu Ser Lys Tyr Glu Thr Leu Gln Met Ala Gln Ile Tyr Ile  
265 195 200 205

RAW SEQUENCE LISTING  
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TIME: 09:00:52

Input Set : A:\253625.ST25.txt  
Output Set: N:\CRF4\11092006\J586072A.raw

268 Asn Ala Leu Ser Glu Leu Leu Gln Thr Pro Ser Gly Gly Glu Gln Pro  
269 210 215 220  
272 Pro Pro Pro Ala Ser Cys Lys Ser Asp His His His Leu Arg Thr  
273 225 230 235 240  
276 Ala Ala Ser Tyr Glu Gly Gly Ala Gly Asn Ala Thr Ala Ala Gly Ala  
277 245 250 255  
280 Gln Gln Ala Ser Gly Gly Ser Gln Arg Pro Thr Pro Pro Gly Ser Cys  
281 260 265 270  
284 Arg Thr Arg Phe Ser Ala Pro Ala Ser Ala Gly Gly Tyr Ser Val Gln  
285 275 280 285  
288 Leu Asp Ala Leu His Phe Ser Thr Phe Glu Asp Ser Ala Leu Thr Ala  
289 290 295 300  
292 Met Met Ala Gln Lys Asn Leu Ser Pro Ser Leu Pro Gly Ser Ile Leu  
293 305 310 315 320  
296 Gln Pro Val Gln Glu Glu Asn Ser Lys Thr Ser Pro Arg Ser His Arg  
297 325 330 335  
300 Ser Asp Gly Glu Phe Ser Pro His Ser His Tyr Ser Asp Ser Asp Glu  
301 340 345 350  
304 Ala Ser  
308 <210> SEQ ID NO: 4  
309 <211> LENGTH: 354  
310 <212> TYPE: PRT  
311 <213> ORGANISM: Homo sapiens  
313 <400> SEQUENCE: 4  
315 Met Ser Arg Leu Leu His Ala Glu Glu Trp Ala Glu Val Lys Glu Leu  
316 1 5 10 15  
319 Gly Asp His His Arg Gln Pro Gln Pro His His Leu Pro Gln Pro Pro  
320 20 25 30  
323 Pro Pro Pro Gln Pro Pro Ala Thr Leu Gln Ala Arg Glu His Pro Val  
324 35 40 45  
327 Tyr Pro Pro Glu Leu Ser Leu Leu Asp Ser Thr Asp Pro Arg Ala Trp  
328 50 55 60  
331 Leu Ala Pro Thr Leu Gln Gly Ile Cys Thr Ala Arg Ala Ala Gln Tyr  
332 65 70 75 80  
335 Leu Leu His Ser Pro Glu Leu Gly Ala Ser Glu Ala Ala Ala Pro Arg  
336 85 90 95  
339 Asp Glu Val Asp Gly Arg Gly Glu Leu Val Arg Arg Ser Ser Gly Gly  
340 100 105 110  
343 Ala Ser Ser Ser Lys Ser Pro Gly Pro Val Lys Val Arg Glu Gln Leu  
344 115 120 125  
347 Cys Lys Leu Lys Gly Gly Val Val Val Asp Glu Leu Gly Cys Ser Arg  
348 130 135 140  
351 Gln Arg Ala Pro Ser Ser Lys Gln Val Asn Gly Val Gln Lys Gln Arg  
352 145 150 155 160  
355 Arg Leu Ala Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn  
356 165 170 175  
359 His Ala Phe Asp Gln Leu Arg Asn Val Ile Pro Ser Phe Asn Asn Asp  
360 180 185 190  
363 Lys Lys Leu Ser Lys Tyr Glu Thr Leu Gln Met Ala Gln Ile Tyr Ile

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Input Set : A:\253625.ST25.txt  
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364	195	200	205
367	Asn Ala Leu Ser Glu Leu Leu Gln Thr Pro Ser Gly Gly Glu Gln Pro		
368	210	215	220
371	Pro Pro Pro Ala Ser Cys Lys Ser Asp His His His Leu Arg Thr		
372	225	230	235
375	240	Ala Ala Ser Tyr Glu Gly Gly Ala Gly Asn Ala Thr Ala Ala Gly Ala	
376	245	250	255
379	Gln Gln Ala Ser Gly Gly Ser Gln Arg Pro Thr Pro Pro Gly Ser Cys		
380	260	265	270
383	Arg Thr Arg Phe Ser Ala Pro Ala Ser Ala Gly Gly Tyr Ser Val Gln		
384	275	280	285
387	Leu Asp Ala Leu His Phe Ser Thr Phe Glu Asp Ser Ala Leu Thr Ala		
388	290	295	300
391	Met Met Ala Gln Lys Asn Leu Ser Pro Ser Leu Pro Gly Ser Ile Leu		
392	305	310	315
395	320	Gln Pro Val Gln Glu Glu Asn Ser Lys Thr Ser Pro Arg Ser His Arg	
396	325	330	335
399	Ser Asp Gly Glu Phe Ser Pro His Ser His Tyr Ser Asp Ser Asp Glu		
400	340	345	350

403 Ala Ser

407 <210> SEQ ID NO: 5

408 <211> LENGTH: 21

409 <212> TYPE: PRT

410 <213> ORGANISM: Drosophila

412 <400> SEQUENCE: 5

414 Ala Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn His Ala

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418 Phe Asp Gln Leu Arg

419 20

422 <210> SEQ ID NO: 6

423 <211> LENGTH: 1393

424 <212> TYPE: DNA

425 <213> ORGANISM: Mus musculus

427 <400> SEQUENCE: 6

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430	ggaaaggaaaa aaaatcagac cttgcagaag agactaggaa ggttttgtt gtttgttttc	120
432	ggggcttatac cccttcgttg aactgggtt ccagcacctc ctctaacacg gcacctccga	180
434	gccattgcag tgcgtatgtcc cgcctgtgc atgcagaaga gtgggctgag gtaaaaagagt	240
436	tgggggacca ccatcgccat ccccgccgc accacgtccc gccgctgacg ccacagccac	300
438	ctgctaccct gcaggcgaga gacttcccc tctaccggc agaactgtcc ctcctggata	360
440	gcaccgcaccc acgcgcctgg ctgactccca cttgcaggg cctctgcacg gcacgcgcgg	420
442	cccaatgtatct gtcgtatct cccgagctgg gtgcctccga ggccgcggcg ccccgccgacg	480
444	aggctgacag ccagggttag ctggtaagga gaagcgctg tggcgccctc agcaagagcc	540
446	ccggggcccgta caaaatgtacgg gaacagctgt gcaagctgaa ggggtgggtt gtatgtggacg	600
448	agcttggctg cagccgcac cgagccctt ccagcaaaca ggtgaatggg gtacagaagc	660
450	aaaggaggct ggcagcaaac gcaaggaaac ggcgcaggat gcacggctg aaccacgcct	720
452	tcgaccagct ggcgaacgtt atcccgctt tcaacaacga caagaagctg tccaaatatg	780
454	agaccctaca gatggcccgat atctacatca acgctctgtc ggagttgtctg cagactccca	840
456	atgtcggaga gcaaccgcgc cccggccacag cttcgtcaa aaatgaccac catcaccttc	900

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/10/586,072A

DATE: 11/09/2006  
TIME: 09:00:53

Input Set : A:\253625.ST25.txt  
Output Set: N:\CRF4\11092006\J586072A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:7; N Pos. 1497,1504,1526,1564

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/10/586,072A

DATE: 11/09/2006

TIME: 09:00:53

Input Set : A:\253625.ST25.txt

Output Set: N:\CRF4\11092006\J586072A.raw

L:10 M:270 C: Current Application Number differs, Replaced Current Application No

L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:15 M:283 W: Missing Blank Line separator, <160> field identifier

L:552 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:1440

M:341 Repeated in SeqNo=7

**STATISTICS SUMMARY**

PATENT APPLICATION: US/10/586,072A

DATE: 11/09/2006

TIME: 09:00:53

Input Set : A:\253625.ST25.txt

Output Set: N:\CRF4\11092006\J586072A.raw

Application Serial Number: US/10/586,072A

Alpha or Numeric or Xml: Numeric

Application Class:

Application File Date: 07-14-2006

Art Unit: IFWO

Software Application: PatentIN3.3

Total Number of Sequences: 7

Total Nucleotides: 2965

Total Amino Acids: 1431

Number of Errors: 0

Number of Warnings: 4

Number of Corrections: 2

**MESSAGE SUMMARY**

270 C: 1 (Current Application Number differs)

271 C: 1 (Current Filing Date differs)

283 W: 1 (Missing Blank Line separator)

341 W: 3 ((46) "n" or "Xaa" used)